REMARKS/ARGUMENTS

Amendments

The specification is amended to correct the page numbering and several oversights that are grammatical, clerical or typographical in nature. Additionally, the claims are modified in the amendment. Applicant respectfully requests reconsideration of this application as amended. Claims 5, 11-12 and 17-19 have been amended. No Claims have been cancelled. New claims 27 and 28 have been added. Therefore, claims 1-28 are present for examination. No new matter is added by these amendments.

Submission of formal drawings

Formalized drawing sheets are provided with this response. The objections related to the drawings are solved in the amendments to the specification listed above. Applicant believes there are no substantive changes in the replacement drawings.

Objection to the Declaration

The ADS is amended to reflect the residence of the inventor. Applicants believe this addresses the objection to the declaration.

35 U.S.C. §102 Rejection, Thompson, et al.

The Examiner has rejected claims 1-7, 13-15, 17 and 19-26 under 35 U.S.C. §102(e) as being anticipated by Thompson et al. (U.S. Patent No. 6,479,958). In one embodiment, the claimed invention is defined by reference to *pulsing the current "on" and "off" at a first predetermined cycle frequency,* and the said first predetermined cycle frequency of the present invention is identified with a number of novel features.

Although the present invention relates to *electric* motor driven devices generally, it should be borne in mind that the present invention is more suitable for devices with limited DC power source of battery power supply than for AC powered devices because the pulsing cycle frequency identified in the present invention would enable or at least assist in a saving of power consumption from the limited DC power source.

The novel features of the pulsing cycle frequency of the present invention are addressed Claims 1, 2, 3 and 4 and described in the specification. It should be appreciated that the pulsing cycle frequency has a pulsing cycle, and the duration of the pulsing cycle is governed by the duration of each pulse (that is, the duration of the "on" cycle of the pulsing frequency) and the duration between two consecutive pulses (that is, the duration of the "off" cycle of the pulsing frequency). It is submitted that the novel features relating to the "on" cycle duration and the "off" cycle duration are not anticipated by Thompson in U.S. Patent No. 6,479,958.

In Claims 1, 13 and 20, the pulsing cycle frequency is defined with each "on" cycle (that is, the pulse current "on" duration) being of sufficient duration to allow the motor to draw sufficient current in response to the load. In paragraph 19 of the description, it is explained that this pulse current "on" duration is chosen to allow the current to reach its normal operating value in response to the load. This feature is considered advantageous because during the pulse current "off" duration, the current is totally disconnected and the motor may be practically idle. Therefore, sufficient time is required to draw sufficient current *to resume* motor operation.

The cited reference by Thompson discloses a pulse mode operation wherein the pulses have a peak torque being of substantial greater value sufficient to clear the stall condition. There is a disclosure of supplying "rapid" on/off current pulses to the motor in column 4, line 31; and in column 5, lines 2 to 14 there is disclosure of current "on" time and current "off" time having equal or different durations and that the "on" time and "off" time durations can be derived from the AC power line frequency or generated by the onboard clock of the microcontroller and "suitably" choosing the "on" time and "off" time values. However, none of the disclosure in Thompson teach or suggest how to determine the actual time duration of the "on" time or the "off" time other than to say "rapid" and "suitably"; and Thompson does not teach how to determine the current "on" time by reference to the normal current operating value as in the present invention.

In Claims 2, 14 and 21, the pulsing cycle frequency is further defined with each "on" cycle (that is, the current "on" time) being of sufficient duration to maintain sufficient current to the motor to normalize the forward motion. This feature is explained for an

embodiment in paragraph 21 of the specification. One purpose of this feature is *to maintain* the normal motor operation temporarily but longer than simply to resume motor operation as defined in Claims 1, 13 and 20.

Thompson in column 2, lines 54 to 67, teaches a pulse mode operation for a predetermined period or duration, which is the feature in Claims 6, 9 and 24, but does not teach or suggest the limitations in Claims 2, 14 and 21.

Further, Thompson discloses that normal operation in the forward motion is achieved by having a peak torque with a substantial greater value which in many cases is expected to clear the stall condition. If not, then the power to the motor is removed (that is, ending the pulse mode operation) after the predetermined period to avoid burnout of the motor. There is no suggestion in Thompson that the normal operation is achieved by maintaining the pulse mode operation for a sufficient period of time. There is again no teaching nor suggestion of how to determine the current "on" time or the pulse duration of the pulsing cycle frequency as in the claimed invention.

In Claims 3, 15 and 22, the present invention turns to address the "off" cycle (that is, the current "off" time) of the pulsing cycle frequency being of sufficient duration to allow the motor to be substantially released from the forward motion. This novel feature is preferred for various obvious reasons and benefits, such as to properly release the motor from the load (which would in turn allow the motor to restart with each pulse or each "on" cycle) and a saving of power consumption (especially for limited DC power source).

Thompson actually does not address that the current "on" time or the current "off" time of each pulse cycle be of sufficient period. He only makes a reference that the "overall" current pulse mode operation time be for a predetermined period and he does not say expressly or suggest that the predetermined period for pulse mode operation be sufficient for any purpose. To allow the motor to resume its normal operation is achieved by the substantially greater peak torque value of the pulses, not the length of total time for pulse mode operation.

Referring to Claims 4 and 23, the range from 0.1 second to 13 seconds is not anticipated or disclosed by Thompson. It should be remembered that the graphs of Thompson show AC line cycles which is 60 cycles per second and therefore, the illustration of one current

pulse per six cycle frequency equals to one current pulse per 0.1 second frequency. Further to this point, another range of the present invention from 0.30 second to 1 second appears in new claims 27 and 28 and is also not taught or suggested by Thompson.

The claims comprising novel features are either independently or in combination patentable over Thompson and all other claims dependent therefrom are likewise patentable.

Regarding the feature of Claims 5, 11, 17, 19 and 26, Thompson's disclosure of overcoming stall condition by delivering substantially greater torque pulses would quickly deplete a limited DC power source whereas the features of claims 1, 2, 3 and 4 of the present invention could properly regulate the duration of each pulse thus achieving preserving power consumption in a limited DC power source. Regarding Claims 6 and 24, they address a practical feature of the present invention. Claims 7 and 25 address another practical feature of the present invention.

35 U.S.C. §103 Rejection, Thompson et al.

The Examiner has rejected claims 8-12, 16 and 18 under 35 U.S.C. §103(a) as being unpatentable over Thompson et al. (U.S. Patent No. 6,479,958) in view of Glasgow et al. (U.S. Patent No. 6,392,373).

Regarding the cited reference U.S. Patent No. 6,392,373 by Glasgow, it may have disclosed a motor having both forward and reverse motion. However, the reverse motion is initiated by "manually" releasing the trigger switch (and this generates a voltage less than the predetermined cut-off value), that is "manually" releasing the motor from the forward motion, or "manually" terminating the forward current and re-setting the trigger switch. Further, the purpose of the automatic reverse motion after release of the trigger switch, as disclosed by Glasgow, is to alleviate after flow problems associated with dispensing materials.

Therefore Glasgow can neither be read together with Thompson nor with the present invention, both which aim to deal with stall or kickback condition and wherein the initiation of pulsing (or reverse) motion is caused by an over current or overload condition and not by a termination of the forward current as suggested by Glasgow. In both Thompson and the present invention, upon manually terminating the pulsing (or reverse) motion by release of the

trigger switch, all motor motion would simply stop and the trigger switch would re-set, rather than enter into a reverse or another motion. Accordingly, Claims 8, 12, 16 and 18 and claims dependent therefrom should not be rejected on the basis of the disclosures in Glasgow.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance and an action to that end is urged. Reconsideration of the claims in their current form is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 303-571-4000.

Respectfully submitted,

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